UNITED STATES PATENT OFFICE.

MERCER REYNOLDS, OF CHATTANOOGA, TENNESSEE.

PROCESS OR METHOD OF REFINING OILS.

1,419,760. Specification of Letters Patent. Patented June 13, 1922.

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To all whom it may concern:

Be it known that I, MERCER REYNOLDS, a citizen of the United States, and a resident of Chattanooga, county of Hamilton, State of Tennessee, have invented certain new and useful Improvements in a Process or Method of Refining Oils, of which the following is a specification.

The object of my invention is to refine and bleach oils, particularly vegetable oils.

Another object is the refining and bleaching of oils of a grade which heretofore has been unprofitable to deal with and which has been a loss to producer and the refiner.

The present method of refining a prime cotton seed oil is to first find the free fatty acid content of the crude oil and then saponify it with caustic soda, leaving the finished product of the proper color; which is 7.6 red and 35 yellow. These are standard colors used throughout the industry.

This step is repeated as often as desired until the proper color is reached. Where fuller's earth is used to bleach the oil, the color is set in the oil by the heat necessarily applied thereto, which prevents further bleaching by the use of this agent. Therefore its practical use is limited to one bleaching and the desired result must be reached by repeated treatment with caustic soda and its accompanying loss by saponification.

I have discovered that oil can be refined, then bleached, then re-refined and bleached, and if necessary again refined and bleached, and in each step excellent results are obtained. The apparent action which takes place during these alternate steps is that caustic soda frees the color, making it available for reaction with the bleaching agent. This color cannot be removed with continued bleachings but is only acted on by the intermediate steps of refining, or what is sometimes called "washing".

As an illustration: I refined oil with free fatty acid content of 11.5 per cent using in the first refining 15 per cent of 24° Baumé caustic soda, then re-refined it seven times with the best known percentages and strengths of caustic soda solution, with a 7.6 red and 20 yellow finished oil, with a total loss of 49 per cent by weight.

With my method I refined this oil with a 15 per cent of 24° Baumé caustic soda solution, then bleached this product with $6\frac{2}{3}$ per cent of fuller's earth; then re-refined or washed this oil with a 4 per cent of 16° caustic soda solution, then bleached this product with $6\frac{2}{3}$ per cent of fuller's earth; then re-refined or washed this product with a 4 per cent of 16° Baumé caustic soda solution, then bleached with $6\frac{2}{3}$ per cent of fuller's earth, which gave me a summer white oil of 2.3 red and 20 yellow, with a total loss in refining and bleaching of 35.4 per cent by weight, in comparison with the same crude oil that was refined by the old method eight times with a finished product of 7.6 red and 35 yellow.

I do not confine my method to treatment of off grade vegetable oils or edible oils, as the advanage of this process on all kinds of oils that require refining and bleaching will be apparent to those skilled in the art. Neither am I limited to any specified amount or strength of caustic soda or any specified percentage of fuller's earth, as this will have to be determined according to the quality and grade of oil being treated, and the color desired in the finished product.

What I claim and desire to secure by Letters Patent is:

1. The process of bringing off color oils up to a desired color standard by repeating the alternate steps of refining and bleaching said refining step including saponification.

2. The process of bringing off color oils up to a desired standard by repeating the alternate steps of refining with caustic soda solution, and bleaching.

3. The process of bringing off color oils up to a desired standard by repeating the alternate steps of refining with caustic soda solution and bleaching with fuller's earth.

In testimony whereof, I affix my signature.

MERCER REYNOLDS.